IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
Attorney Docket № 14541US02 (BU 3027)

In re Application of:

Haixiang Liang

Serial No.: 10/767,604

Filing Date: January 28, 2004

For: OPERATIONAL ANALYSIS SYSTEM FOR A COMMUNICATION DEVICE

Examiner: CHEN, QING

Group Art Unit No.: 2191

Confirmation No.: 5206

Customer No.: 23446

Electronically filed on 15-SEP-2010

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from an Office Action dated April 19, 2010 ("Final Office Action"), in which claims 9-13 and 19-46 were finally rejected. The Appellant respectfully requests that the Board of Patent Appeals and Interferences ("Board") reverses the final rejection of claims 9-13 and 19-46 of the present application. The Appellant notes that this Appeal Brief is timely filed within the two-month period for reply that ends on **September 15, 2010** (the Office date of receipt of the Notice of Appeal being July 15, 2010).

REAL PARTY IN INTEREST
(37 C.F.R. § 41.37(c)(1)(i))

Broadcom Corporation, a corporation organized under the laws of the state of California, and having a place of business at 5300 California Avenue, Irvine, California 92617, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment recorded at Reel 014629, Frame 0144 in the PTO Assignment Search room.

RELATED APPEALS AND INTERFERENCES
(37 C.F.R. § 41.37(c)(1)(ii))

The Appellant is unaware of any related appeals or interferences.

STATUS OF THE CLAIMS
(37 C.F.R. § 41.37(c)(1)(iii))

Claims 9-13 and 19-46 were finally rejected in the Final Office Action mailed April 19, 2010. Claims 1-8 and 14-18 were canceled without prejudice in the Appellant's amendment dated July 10, 2007. Pending claims 9-13 and 19-46 are the subject of this appeal.

The present application includes claims 9-13 and 19-46, which are pending in the present application. Claims 9-13 and 39-41 stand rejected under 35 U.S.C. § 102(e) as

being anticipated by U.S. Patent No. 6,823,004, by Abdelilah et al. *See* Final Office Action at pages 2-8.

Claims 19-38, 42-44 and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,823,004, by Abdelilah et al., in view of U.S. Patent No. 6,467,052, by Kaler et al. *See* Final Office Action at pages 8-30.

Claim 45 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,823,004, by Abdelilah et al., in view of U.S. Patent No. 6,467,052, by Kaler et al., and further in view of U.S. Patent No. 5,353,243, by Read et al. *See* Final Office Action at pages 30-31.

The Appellant identifies claims 9-13 and 19-46 as the claims that are being appealed. The text of the pending claims is provided in the Claims Appendix.

STATUS OF AMENDMENTS
(37 C.F.R. § 41.37(c)(1)(iv))

The Appellant has not amended any claims subsequent to the final rejection of claims 9-13 and 19-46 mailed on April 19, 2010.

SUMMARY OF CLAIMED SUBJECT MATTER
(37 C.F.R. § 41.37(c)(1)(v))

Independent claim 9 recites the following:

A modem device[1] comprising:

a first input that operates to receive information from a first device that is utilizing the modem device to communicate with a second device through a communication network;[2]

a second input that operates to receive information from the second device through the communication network;[3] and

a recording module processor communicatively coupled to the first input and the second input that operates to fully record input information arriving at one or both of the first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis.[4]

Claims 10-13 and 39-41 are dependent upon claim 9.

Independent claim 19 recites the following:

A non-real-time playback environment for analyzing real-time performance of a modem,[5] the environment comprising:

a memory comprising input information recorded by a recording module residing on a modem, wherein the recording module fully records the input information received at the modem during real-time operation of the modem;[6] and

---

[1] *See* present application, *e.g.*, at page 5, lines 2-3 and 5-6; page 7, lines 13-14; page 8, lines 5-6; Figure 1 (101).
[2] *See id., e.g.*, at page 8, lines 11-13; Figure 1 (107).
[3] *See id., e.g.*, at page 8, lines 9-11; Figure 1 (105).
[4] *See id., e.g.*, at page 5, lines 3-5; page 7, lines 2-5 and 9-11; page 8, lines 24-27; page 9, lines 6-7 and 23-27; page 11, lines 3-10 and 15-17; Figure 1 (103).
[5] *See* present application, *e.g.*, at page 5, lines 5-13; page 9, lines 13-15; Figure 2 (200).
[6] *See id., e.g.*, at page 5, lines 3-5; page 7, lines 9-12; page 9, lines 6-10 and 19-27; page 11, lines 20-24; page 12, lines 24-27; Figure 2 (102, 104).

a playback module communicatively coupled to the memory, the playback module comprising a model of the modem that the playback module executes according to the input information in the memory.[7]

Claims 20-26 and 42-46 are dependent upon claim 19.

Independent claim 27 recites the following:

A method for analyzing real-time operation of a modem,[8] the modem comprising a first input that receives information from a first device that is utilizing the modem to communicate with a second device through a communication network[9] and a second input that receives information from the second device through the communication network,[10] the method comprising:

operating the modem in real-time to communicatively couple the first device and the second device, the modem comprising a recording module; [11]

while operating the modem in real-time, utilizing the recording module to fully record input information input to at least the first and/or second inputs of the modem;[12] and

after operating the modem in real-time, executing a model of the modem, where the model is responsive to the recorded input information.[13]

---

[7] *See id., e.g.,* at page 5, lines 5-7; page 10, lines 3-16 and 22-26; page 11, lines 3-10; page 12, lines 1-12; page 13, lines 1-6; Figure 2 (204).
[8] *See* present application, *e.g.,* at page 11, lines 11-13; Figure 3 (300).
[9] *See id., e.g.,* at page 8, lines 11-13; Figure 1 (107).
[10] *See id., e.g.,* at page 8, lines 9-11; Figure 1 (105).
[11] *See id., e.g.,* at page 8, lines 9-22; page 11, lines 13-14; Figure 3 (301).
[12] *See id., e.g.,* at page 5, lines 3-5; page 7, lines 2-5 and 9-11; page 8, lines 24-27; page 9, lines 6-7 and 23-27; page 11, lines 3-10 and 15-28; Figure 1 (103); Figure 3 (302).
[13] *See id., e.g.,* at page 5, lines 5-7; page 10, lines 3-16 and 22-26; page 11, lines 3-10; page 12, lines 1-21; page 13, lines 1-6; Figure 2 (204); Figure 3 (303, 304).

Claims 28-38 are dependent upon claim 27.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

Claims 9-13 and 39-41 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,823,004, by Abdelilah et al. *See* Final Office Action at pages 2-8.

Claims 19-38, 42-44 and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,823,004, by Abdelilah et al., in view of U.S. Patent No. 6,467,052, by Kaler et al. *See* Final Office Action at pages 8-30.

Claim 45 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,823,004, by Abdelilah et al., in view of U.S. Patent No. 6,467,052, by Kaler et al., and further in view of U.S. Patent No. 5,353,243, by Read et al. *See* Final Office Action at pages 30-31.

ARGUMENT
(37 C.F.R. § 41.37(c)(1)(vii))

In the Final Office Action, claims 9-13 and 39-41 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Abdelilah. Claims 19-38 and 42-46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over various combinations of Abdelilah, Kaler and/or Read.

I. Claims 9-13 and 39-41 Are Not Anticipated by Abdelilah

Claims 9-13 and 39-41 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Abdelilah.

A. Rejection of Independent Claim 9

The Appellant turns to the rejection of claim 9 under 35 U.S.C. § 102(e) as being anticipated by Abdelilah. The Appellant submits that Abdelilah does not disclose or suggest at least the limitation of "a recording module processor communicatively coupled to the first input and the second input that **operates to fully record input information arriving at one or both of the first input and the second input** during real-time operation of the modem device for subsequent non-real-time analysis," as set forth in Appellant's independent claim 9.

Abdelilah merely teaches processing and storing **select data** related to diagnostics, modem performance and internal states.[14] Nowhere in Abdelilah is there any disclosure regarding **fully recording input information arriving at one or both of the first input and the second input**. Rather, Abdelilah identifies the select data that may be obtained, for example, at Column 9, Lines 33-61. More specifically, Abdelilah explicitly and repeatedly discloses that it merely captures "a selected type of data related to the performance of the modem responsive to a state transition."[15] Thus, because Abdelilah merely discloses processing and storing **select data** related to diagnostics, performance and internal states, Abdelilah fails to disclose "a recording module processor communicatively coupled to the first input and the second input that **operates to fully record input information arriving at one or both of the first input and the second input** during real-time operation of the modem device for subsequent non-real-time analysis," as recited by the Appellant in independent claim 9.

Clearly, Abdelilah merely teaches processing and storing **select data** related to diagnostics, performance and internal states.[16] Therefore, Abdelilah fails to disclose "a recording module processor communicatively coupled to the first input and the second input that **operates to fully record input information arriving at one or both of the**

[14] *See e.g.*, Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 30-31 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column 10, Lines 6-7.
[15] *See e.g.*, Abdelilah, Column 5, Lines 28-30; Column 10, Lines 15-19; Column 12, Line 60; Column 13, Lines 26 and 41-42; Column 14, Lines 16-18; Column 15, Lines 35-37; Column 11, Lines 51-53; Column 17, Lines 46-48.
[16] *See e.g.*, Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 27-33 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column 10, Lines 6-7.

first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis," as set forth in Appellant's independent claim 9.

Accordingly, independent claim 9 is not anticipated by Abdelilah and is allowable. Furthermore, the Appellant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of claim 9.

B. Examiner's Response to Arguments

The Examiner responded to the Appellant's arguments on pages 32-34 of the Final Office Action and on page 2 of the Advisory Action. First, the Advisory Action and the Response to Arguments section of the Final Office Action states the following:

> Abdelilah clearly discloses "a recording module processor communicatively coupled to the first input and the second input that operates to cause all input information arriving over a period of time at one or both of the first input and the second input during real-time operation of the modem device to be recorded for subsequent non-real-time analysis"
>
> (see Column 9: 66 and 67 to Column 10: 1-49, "...the teachings of the present invention are particularly directed to environments in which both a primary path and a secondary path are available to the DSP memory 345 to provide for monitoring operations to occur in real time while a communication connection is active through the modem. As is evident from **the types of information identified above which may be monitored** according to the present invention, **a significant amount of performance information can be tracked** during a communication connection, for example, on a minute-by-minute basis or responsive to detection of the occurrence of certain events. The monitoring system of the present invention may be utilized to monitor internal states of the modem 310 or state transitions of one or more state machines implemented within the modem 310 and to **selectively record specified parameters** out of the total set of parameters available within the

DSP memory 345 during state conditions where the **selected parameters are significant or of potential interest to a diagnostic user**." and

"Information may be collected on a real time basis and recorded during the life of a connection. Furthermore, information about disconnects may be gathered and throughput for a connection can be estimated. In addition, data may also be collected when a connection is being attempted, in other words, during the startup phases before a connection is in use for data communication." and

"Furthermore, as performance information may be collected on a real-time basis during a connection, **pertinent data may be preserved** which might otherwise be lost as a result of an event causing diagnostic data in the DSP memory 345 to be overwritten (for example, during retrains). The performance data may be recorded while the user of the client modem 310 is actively connected to a remote server modem in a normal manner such as through a service provider end user application (e.g. AOL, IGN Dialer and Windows Dial-up Networking) executing on the host system 300. Performance data may be obtained throughout the active connection operations including both the startup phases and during data communication as well as the disconnect procedures.

Note that Abdelilah's invention is directed to monitoring the performance of a modem which may be able to obtain data in real-time. Abdelilah discloses that real-time modem performance data, internal states of the modem, modem communication data, and modem startup and disconnect data, etc. are recorded during the life of a connection of the modem. **Thus, one of ordinary skill in the art would readily comprehend that pertinent data and information related to the performance of the modem must be fully recorded in order to provide a complete analysis of the performance of the modem at a later time.**[17]

Clearly, as the cited sections of Abdelilah explicitly teach, Abdelilah does not **fully record input information arriving at one or both of a first input and a second input** during real-time operation of the modem device. Rather, Abdelilah merely teaches **selectively recording specified parameters** (i.e., certain types of information,

[17] Advisory Action, Page 2, Lines 8-31 *and* Final Office Action, Page 32, Line 18 – Page 34, Line 9 (emphasis added).

pertinent data). Further, even the Examiner explicitly acknowledges recording only pertinent information and information related to the performance of the modem, which is different than fully recording input information arriving at one or both of a first input and a second input during real-time operation of the modem device. More specifically, "pertinent data" and "information related to the performance of the modem" are different than "input information arriving at one or both of a first input and a second input during real-time operation of the modem device." Additionally, in the previous non-final Office Action, the Examiner explicitly acknowledges that Abdelilah only records relevant modem data.[18]

Second, the Advisory Action further states that "[f]or further clarification, the Examiner also submits that in order for Abdelilah's invention to monitor the performance of the modem, **all data related to the performance of the modem must be recorded**."[19] However, recording all data related to the performance of the modem is different than recording all input information arriving at one or both of a first input and a second input during real-time operation of the modem device. More specifically, nowhere in Abdelilah is there any disclosure that its performance data includes all input information arriving at one or both of a first input and a second input during real-time operation of the modem device. Rather, Abdelilah explicitly and repeatedly defines

[18] October 27, 2009 Non-Final Office Action, Page 37, Line 22 - Page 38, Line 3.
[19] Advisory Action, Page 2, Lines 32-33 (emphasis added).

performance data to be a selected type of data,[20] much of which is not even received at its inputs 310 and 315.[21]

Third, the Advisory Action also states the following:

> Abdelilah clearly discloses recording the data, samples, and commands of a modem. As discussed in the first reason hereinabove, Abdelilah's invention records real-time modem performance data, internal states of the modem, modem communication data, and modem startup and disconnect data, etc. during the life of a connection of the modem. One of ordinary skill in the art would readily recognize that the various pertinent data and information recorded are the data, samples, and commands of the modem.[22]

However, Appellant's independent claim 9 does not recite "recording data, samples, and commands of a modem." Instead, Appellant's independent claim 9 set forth "a recording module processor communicatively coupled to the first input and the second input that **operates to fully record input information arriving at one or both of the first input and the second input** during real-time operation of the modem device for subsequent non-real-time analysis." In other words, all of the information arriving at one or both of the first input and the second input is recorded. Abdelilah does not teach fully recording input information arriving at one or both of the first input and second input. Rather, as discussed in detail above, Abdelilah merely teaches processing and storing **select data** related to diagnostics, performance and internal states.[23]

---

[20] *See e.g.*, Abdelilah, Column 5, Lines 28-30; Column 10, Lines 15-19; Column 12, Line 60; Column 13, Lines 26 and 41-42; Column 14, Lines 16-18; Column 15, Lines 35-37; Column 11, Lines 51-53; Column 17, Lines 46-48.
[21] *See e.g.*, Abdelilah, Column 9, Lines 33-61.
[22] Advisory Action, Page 2, Lines 39-43.
[23] *See e.g.*, Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 30-31 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column 10, Lines 6-7.

Accordingly, independent claim 9 is not anticipated by Abdelilah and is allowable. Furthermore, the Appellant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of claim 9.

C. Rejection of Dependent Claims 10-13 and 39-41

Claims 10-13 and 39-41 depend on independent claim 9. Therefore, the Appellant submits that claims 10-13 and 39-41 are allowable over the reference cited in the Final Office Action at least for the reasons stated above with regard to claim 9. The Appellant further submits that each of dependent claims 10-13 and 39-41 is independently allowable.

For example, regarding Appellant's dependent claim 10, Abdelilah at least fails to disclose "**a command input** that receives modem control commands from the first device, and wherein the recording module processor further causes **modem control commands arriving at the command input during real-time operation of the modem device to be fully recorded** for subsequent non-real-time analysis." The Final Office Action alleges that the limitations of Appellant's dependent claim 10 are anticipated by Abdelilah's disclosure of "see Column 9: 33-37, 'Performance information so obtained may include a variety of information including ... call setup return codes (CSR CODE) such as those available on Microsoft Corporation's AT code #UD (UniModem diagnostic command specification) ...'."[24] However, as one of ordinary skill in the art would readily be able to ascertain, Abdelilah's mere disclosure of obtaining call

[24] Final Office Action, Page 5, Lines 2-4.

setup return codes does not teach or suggest **fully recording modem control commands arriving at a command input**. More specifically, Abdelilah does not even specifically disclose a command input, let alone recording all of the modem control commands arriving at a command input.

As another example, regarding Appellant's dependent claim 11, Abdelilah at least fails to disclose "wherein the first device is a personal computer, and wherein the recording module operates to cause the **input information arriving at the first input from the personal computer and arriving at the second input from the second device through the communication network, during real-time operation of the modem device, to be fully recorded on a memory device of the personal computer**." The Final Office Action states the following:

> see Figure 3: 300; Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port 320 and provided to a destination application executing on the host system 300 by modem 310."; Column 8: 15-20, "The DSP memory 345 further includes one or more first-in-first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein."[25]

However, the Appellant notes that, as shown above, Abdelilah's disclosure at Column 7, Lines 51-55 merely describes the host system 300 and a remote device communicating via a modem 310, which fails to teach fully recording input information arriving at a first input and a second input on a memory device of a personal computer. Further, Abdelilah's disclosure at Column 8, Lines 15-20 merely states that state transitions are

[25] Final Office Action, Page 5, Lines 11-17.

recorded at FIFO buffers 355, 360 of DSP memory 345. However, as shown in Figure 3, FIFO buffers 355, 360 of DSP memory 345 are part of modem 310, not a personal computer (PC). Further, as is well known in the art, merely recording state transitions fails to teach fully recording input information arriving at a first input and a second input on a memory device of a personal computer.

Additionally, regarding Appellant's dependent claim 12, Abdelilah at least fails to teach or suggest, for example, "wherein **the recording module processor operates to cause input information arriving at the first input from the first device and arriving at the second input from the second device** through the communication network to be communicated to a networked computer communicatively coupled to the modem device over the communication network and **fully recorded on a memory device of the networked computer**." The Final Office Action states the following:

> see Column 8: 53-62, "Accordingly, in preferred embodiments of the present invention, modem performance is monitored by a host system 300 containing an internal modem 310. Nonetheless, the benefits of the present invention may also be obtained in various other embodiments including those in which the secondary path 335 does not return to the same host as the primary path 315. A second host may be co-located or remote from the first host. In fact, a remote second host could be at a distant location monitoring a modem connection through the secondary path 335."[26]

However, Abdelilah's disclosure of using a remote second host to monitor a modem connection does not teach a recording module processor of a modem device causing input information arriving at a first input from a first device and arriving at a second input from a second device to be fully recorded on a memory device of a networked

[26] Final Office Action, Page 6, Lines 5-11.

computer. More specifically, nowhere in Abdelilah is there any disclosure of a processor within Abdelilah's modem 310 that causes the information arriving at first and second inputs of the modem 310 to be fully recorded at a networked computer's memory device.

Further, regarding Appellant's dependent claim 39, Abdelilah at least fails to teach or suggest, for example, "wherein **the modem device operates to cause the input information to be fully recorded on the memory device of the personal computer** by, at least in part, **being driven as an operating system (OS) device driver of the personal computer to write the input information directly to a hard drive of the personal computer**." The Final Office Action states the following:

> see Column 4: 20-24, "One known approach to evaluating modem performance is the use of AT commands, such as those provided for by operating system, such as Windows™ from Microsoft Corporation, for communicating with a modem (such as the #UD command)."[27]

However, as is well known in the art, AT#UD (i.e., unimodem diagnostics command) is in reference to a command that causes select diagnostic information to be logged (e.g., whether call setup failed, reason for call termination, etc.). The AT#UD command does not cause input information to be fully recorded, nor does it cause information to be directly written to a hard drive of a personal computer. In fact, the two sentences after the section cited in Abdelilah explicitly teach that "[h]owever, only a limited amount of diagnostic information may be obtained from a modem using this approach. Furthermore, the modem communication session typically must be terminated to obtain

[27] Final Office Action, Page 7, Lines 2-5.

information using AT commands, which not only interrupts ongoing operations but further may limit the amount and types of data available from the modem, (for example, due to retraining procedures overwriting various data within the modem)."[28] As such, the cited section of Abdelilah clearly cannot teach "wherein **the modem device operates to cause the input information to be fully recorded on the memory device of the personal computer** by, at least in part, **being driven as an operating system (OS) device driver of the personal computer to write the input information directly to a hard drive of the personal computer**," as set forth in Appellant's dependent claim 39.

Also, regarding Appellant's dependent claim 40, Abdelilah at least fails to disclose "wherein **the recording module processor** is integrated into an integrated circuit **of the modem device**." The Final Office Action alleges that the limitations of Appellant's dependent claim 40 are anticipated by Abdelilah's disclosure of "see Figure 3: 340, 345, 355, and 360."[29] However, none of the components listed by the Examiner (e.g., DSP 340, DSP memory 345, FIFO Buffer 1 355, FIFO Buffer n 360) operate to fully record input information arriving at one or both of the first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis. Instead, as discussed above, Abdelilah merely teaches processing and storing **select data** related to diagnostics, performance and internal states.[30]

---

[28] Abdelilah, Column 4, Lines 23-30.
[29] Final Office Action, Page 5, Lines 2-4.
[30] *See e.g.*, Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 27-33 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column 10, Lines 6-7.

Additionally, regarding Appellant's dependent claim 41, Abdelilah at least fails to teach or suggest, for example, "wherein the recording module processor operates to cause **the input information arriving at the first input and the second input** during real-time operation of the modem device **to be fully recorded in exactly the same sequence as the input information is received at the modem device**." The Final Office Action states the following:

> see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in-first-out (FIFO) buffers 355, 360. **The FIFO buffers 355, 360 implemented in DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310** as will be described further later herein." And 28-33, "...while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to **obtain data related to performance of the modem 310** during an active communication session supported by the primary path 315 to the modem 310."[31]

However, Abdelilah's disclosure of recording state transitions and obtaining data related to the performance of the modem 310 does not teach **fully recording the input information arriving at the first input and the second input**, let alone fully recording the input information **in the exact same sequence** as received at the modem device.

Accordingly, the Appellant submits that claims 10-13 and 39-41 are allowable over the reference cited in the Final Office Action at least for the above reasons. The Appellant also reserves the right to argue additional reasons beyond those set forth above to support the allowability of claims 10-13 and 39-41.

[31] Final Office Action, Page 7, Line 15 – Page 8, Line 2.

II. Claims 19-38, 42-44 and 46 Are Not Obvious Over Abdelilah in view of Kaler

Claims 19-38, 42-44 and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Abdelilah in view of Kaler.

A. Rejection of Independent Claims 19 and 27

The Appellant turns to the rejection of claims 19 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Abdelilah in view of Kaler. The Appellant submits that the combination of Abdelilah and Kaler does not disclose or suggest at least the limitation of "wherein the recording module **fully records the input information received at the modem** during real-time operation of the modem," as set forth in Appellant's independent claim 19, and "while operating the modem in real-time, utilizing the recording module to **fully record input information input to at least the first and/or second inputs of the modem**," as set forth in Appellant's independent claim 27.

As discussed above with regard to Appellant's independent claim 9, Abdelilah merely teaches processing and storing **se lect data** related to diagnostics, modem performance and internal states.[32] Nowhere in Abdelilah is there any disclosure regarding **fully recording the input information received at a modem**. Rather, Abdelilah identifies the select data that may be obtained, for example, at Column 9, Lines 33-61. More specifically, Abdelilah explicitly and repeatedly discloses that it

[32] *See e.g.*, Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 30-31 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column 10, Lines 6-7.

merely captures "a selected type of data related to the performance of the modem responsive to a state transition."[33] Kaler fails to remedy the deficiencies of Abdelilah. Nowhere in Kaler is there any disclosure of fully recording input information received at a modem. Thus, because Abdelilah merely discloses processing and storing **select data** related to diagnostics, performance and internal states, and Kaler fails to remedy the deficiencies of Abdelilah, the combination of Abdelilah and Kaler at least fails to disclose "wherein the recording module **fully records the input information received at the modem** during real-time operation of the modem," as set forth in Appellant's independent claim 19; and, "while operating the modem in real-time, utilizing the recording module to **fully record input information input to at least the first and/or second inputs of the modem**," as set forth in Appellant's independent claim 27.

Clearly, Abdelilah merely teaches processing and storing **select data** related to diagnostics, performance and internal states[34] and Kaler merely teaches analyzing the performance of a data processing system.[35] Therefore, the combination of Abdelilah and Kaler fails to disclose "wherein the recording module **fully records the input information received at the modem** during real-time operation of the modem," as set forth in Appellant's independent claim 19; and, "while operating the modem in real-time, utilizing the recording module to **fully record input information input to at least the**

[33] *See e.g.*, Abdelilah, Column 5, Lines 28-30; Column 10, Lines 15-19; Column 12, Line 60; Column 13, Lines 26 and 41-42; Column 14, Lines 16-18; Column 15, Lines 35-37; Column 11, Lines 51-53; Column 17, Lines 46-48.
[34] *See e.g.*, Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 27-33 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column 10, Lines 6-7.
[35] Kaler, Abstract.

first and/or second inputs of the modem," as set forth in Appellant's independent claim 27.

Accordingly, independent claims 19 and 27 are not unpatentable over Abdelilah in view of Kaler and are allowable. Furthermore, the Appellant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of claims 19 and 27.

B. Examiner's Response to Arguments

The Examiner responded to the Appellant's arguments on pages 32-34 of the Final Office Action and on page 2 of the Advisory Action. First, the Advisory Action and the Response to Arguments section of the Final Office Action states the following:

> Abdelilah clearly discloses "a recording module processor communicatively coupled to the first input and the second input that operates to cause all input information arriving over a period of time at one or both of the first input and the second input during real-time operation of the modem device to be recorded for subsequent non-real-time analysis"
>
> (see Column 9: 66 and 67 to Column 10: 1-49, "...the teachings of the present invention are particularly directed to environments in which both a primary path and a secondary path are available to the DSP memory 345 to provide for monitoring operations to occur in real time while a communication connection is active through the modem. As is evident from **the types of information identified above which may be monitored** according to the present invention, **a significant amount of performance information can be tracked** during a communication connection, for example, on a minute-by-minute basis or responsive to detection of the occurrence of certain events. The monitoring system of the present invention may be utilized to monitor internal states of the modem 310 or state transitions of one or more state machines implemented within the modem 310 and to **selectively record**

specified parameters out of the total set of parameters available within the DSP memory 345 during state conditions where the **selected parameters are significant or of potential interest to a diagnostic user**." and

"Information may be collected on a real time basis and recorded during the life of a connection. Furthermore, information about disconnects may be gathered and throughput for a connection can be estimated. In addition, data may also be collected when a connection is being attempted, in other words, during the startup phases before a connection is in use for data communication." and

"Furthermore, as performance information may be collected on a real-time basis during a connection, **pertinent data may be preserved** which might otherwise be lost as a result of an event causing diagnostic data in the DSP memory 345 to be overwritten (for example, during retrains). The performance data may be recorded while the user of the client modem 310 is actively connected to a remote server modem in a normal manner such as through a service provider end user application (e.g. AOL, IGN Dialer and Windows Dial-up Networking) executing on the host system 300. Performance data may be obtained throughout the active connection operations including both the startup phases and during data communication as well as the disconnect procedures.

Note that Abdelilah's invention is directed to monitoring the performance of a modem which may be able to obtain data in real-time. Abdelilah discloses that real-time modem performance data, internal states of the modem, modem communication data, and modem startup and disconnect data, etc. are recorded during the life of a connection of the modem. **Thus, one of ordinary skill in the art would readily comprehend that pertinent data and information related to the performance of the modem must be fully recorded in order to provide a complete analysis of the performance of the modem at a later time.**[36]

Clearly, as the cited sections of Abdelilah explicitly teach, Abdelilah does not "**fully record**[ ] **the input information received at the modem** during real-time operation of the modem," and "utiliz[e] the recording module to **fully record input information input to at least the first and/or second inputs of the modem**." Rather, Abdelilah merely

[36] Advisory Action, Page 2, Lines 8-31 *and* Final Office Action, Page 32, Line 18 – Page 34, Line 9 (emphasis added).

teaches **selectively recording specified parameters** (i.e., certain types of information, pertinent data). Further, even the Examiner explicitly acknowledges recording only pertinent information and information related to the performance of the modem, which is different than fully recording input information received at the modem. More specifically, "pertinent data" and "information related to the performance of the modem" are different than "the input information received at the modem" and "input information input to at least the first and/or second inputs of the modem." Additionally, in the previous non-final Office Action, the Examiner explicitly acknowledges that Abdelilah only records relevant modem data.[37]

Second, the Advisory Action further states that "[f]or further clarification, the Examiner also submits that in order for Abdelilah's invention to monitor the performance of the modem, **all data related to the performance of the modem must be recorded**."[38] However, recording all data related to the performance of the modem is different than recording all input information received at the modem device (or input to at least the first and/or second inputs of the modem). More specifically, nowhere in Abdelilah is there any disclosure that its performance data includes all input information received at the modem (or input to at least the first and/or second inputs of the modem).

[37] October 27, 2009 Non-Final Office Action, Page 37, Line 22 - Page 38, Line 3.
[38] Advisory Action, Page 2, Lines 32-33 (emphasis added).

Rather, Abdelilah explicitly and repeatedly defines performance data to be a selected type of data,[39] much of which is not even received at its inputs 310 and 315.[40]

Third, the Advisory Action also states the following:

> Abdelilah clearly discloses recording the data, samples, and commands of a modem. As discussed in the first reason hereinabove, Abdelilah's invention records real-time modem performance data, internal states of the modem, modem communication data, and modem startup and disconnect data, etc. during the life of a connection of the modem. One of ordinary skill in the art would readily recognize that the various pertinent data and information recorded are the data, samples, and commands of the modem.[41]

However, Appellant's independent claims 19 and 27 do not recite "recording data, samples, and commands of a modem." Instead, Appellant's independent claim 19 sets forth "wherein the recording module **fully records the input information received at the modem** during real-time operation of the modem." Further, Appellant's independent claim 27 recites "while operating the modem in real-time, utilizing the recording module to **fully record input information input to at least the first and/or second inputs of the modem**." In other words, all of the information arriving at the modem (or input to at least the first and/or second inputs of the modem) is recorded. Abdelilah does not teach fully recording the input information received at the modem (or input to at least the first and/or second inputs of the modem). Rather, as discussed in

[39] *See e.g.*, Abdelilah, Column 5, Lines 28-30; Column 10, Lines 15-19; Column 12, Line 60; Column 13, Lines 26 and 41-42; Column 14, Lines 16-18; Column 15, Lines 35-37; Column 11, Lines 51-53; Column 17, Lines 46-48.
[40] *See e.g.*, Abdelilah, Column 9, Lines 33-61.
[41] Advisory Action, Page 2, Lines 39-43.

detail above, Abdelilah merely teaches processing and storing **select data** related to diagnostics, performance and internal states.[42]

As noted above, Kaler fails to remedy the deficiencies of Abdelilah.

Accordingly, independent claims 19 and 27 are not unpatentable over Abdelilah in view of Kaler and are allowable. Furthermore, the Appellant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of claims 19 and 27.

C. Rejection of Dependent Claims 20-26, 28-38, 42-44 and 46

Claims 20-26, 28-38, 42-44 and 46 depend on independent claims 19 or 27. Therefore, the Appellant submits that claims 20-26, 28-38, 42-44 and 46 are allowable over the references cited in the Final Office Action at least for the reasons stated above with regard to claims 19 and 27. The Appellant further submits that each of dependent claims 20-26, 28-38, 42-44 and 46 is independently allowable.

For example, regarding Appellant's dependent claims 23, 34, 42 and 46, the combination of Abdelilah and Kaler at least fail to disclose, for example, "wherein the model of the modem comprises a bit-exact software model of the modem that, when executed produces results that are the same as an original modem that the bit-exact software model is modeling," "wherein executing the model of the modem comprises executing a bit-exact software model of the modem," "wherein the model of the modem

[42] *See e.g.*, Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 30-31 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column 10, Lines 6-7.

comprises a bit-exact software model of the modem that exactly mimics the real-time operation of the modem," and "wherein the playback module comprises playback software comprising a bit-exact model of the operation of the modem, such that any modem behaviors that occurred in real-time operation during the period of time over which the input information was obtained will recur during execution of the playback software in the non-real-time playback environment." The Final Office Action acknowledges that Abdelilah fails to teach the Appellant's claim limitations; however, the final Office Action alleges that Kaler's disclosure at Column 32, Lines 57-62, Column 33, Lines 28-31 and Column 35, Lines 36-47 remedy the deficiencies of Abdelilah.[43] However, the cited section of Kaler merely discloses Kaler's animated application model, which is not a bit-exact software model of a modem or the operation of a modem. Instead, Kaler's animated application model shows the structure and activity of an application whose performance is being studied.[44]

Nowhere in the combination of Abdelilah and Kaler is there any disclosure of a bit-exact software model of a modem or the operation of a modem. As such, the combination of Abdelilah and Kaler cannot teach "wherein the model of the modem comprises a bit-exact software model of the modem that, when executed produces results that are the same as an original modem that the bit-exact software model is modeling," as set forth in Appellant's dependent claim 23; "wherein executing the model of the modem comprises executing a bit-exact software model of the modem," as

[43] Final Office Action, Page 12, Line 14 – Page 13, Line 6; Page 22, Lines 1-12; Page 26, Line 19 – Page 27, Line 5; Page 29, Line 5 – Page 30, Line 3.
[44] Kaler, Column 32, Lines 28-34.

recited in Appellant's dependent claim 34; "wherein the model of the modem comprises a bit-exact software model of the modem that exactly mimics the real-time operation of the modem," as set forth in Appellant's dependent claim 42; and, "wherein the playback module comprises playback software comprising a bit-exact model of the operation of the modem, such that any modem behaviors that occurred in real-time operation during the period of time over which the input information was obtained will recur during execution of the playback software in the non-real-time playback environment," as set forth in Appellant's dependent claim 46.

As another example, regarding Appellant's dependent claim 28, the combination of Abdelilah and Kaler at least fails to disclose "utilizing the recording module comprises utilizing the recording module to **fully record the input information to at least the first and second inputs of the modem to a memory device of the personal computer**." The Final Office Action states the following:

> see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in-first-out (FIFO) buffers 355, 360. **The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310** as will be described further later herein." And 28-33, "...while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to **obtain data related to performance of the modem 310** during an active communication session supported by the primary path 315 to the modem 310"[45]

However, Abdelilah's disclosure at Column 8, Lines 15-20 merely states that state transitions are recorded at FIFO buffers 355, 360 of DSP memory 345. As shown in Figure 3, FIFO buffers 355, 360 of DSP memory 345 are part of modem 310, not a

[45] Final Office Action, Page 5, Lines 11-17.

personal computer (PC). Further, as is well known in the art, merely recording state transitions and obtaining data related to the performance of a modem fails to teach fully recording input information arriving at a first input and a second input on a memory device of a personal computer. Kaler fails to remedy the deficiencies of Abdelilah.

Additionally, regarding Appellant's dependent claim 30, the combination of Abdelilah and Kaler at least fails to disclose, for example, "the second device is a computer; and utilizing the recording module comprises utilizing the recording module to fully record input information to a memory device of the computer." The Final Office Action states the following:

> see Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port 320 and provided to a destination application executing on the host system 300 by modem 310."[46]
>
> see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in-first-out (FIFO) buffers 355, 360. **The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310** as will be described further later herein." and 28-33, "...while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to **obtain data related to performance of the modem 310** during an active communication session supported by the primary path 315 to the modem 310."[47]

However, Appellant's claim 30 is dependent on claim 27, which recites "the modem comprising a first input that receives information from a first device that is utilizing the modem to communicate with a second device through a communication network and a second input that receives information from the second device through the

[46] Final Office Action, Page 18, Line 19 – Page 19, Line 2.
[47] Final Office Action, Page 19, Lines 4-11.

communication network." Although Abdelilah teaches receiving information from host 300 (i.e. a first device) at a modem 310 to communicate with a remote device (i.e., a second device) via a server modem over a PSTN (i.e., communication network), nowhere in Abdelilah is there any disclosure that the remote device (i.e., the second device) is a computer, nor is there any disclosure in Abdelilah that a recording module in Abdelilah's modem 310 is utilized to **fully record input information to a memory device of the computer** (i.e., memory of the remote device). Kaler fails to remedy the deficiencies of Abdelilah. As such, the combination of Abdelilah and Kaler cannot teach "the second device is a computer; and utilizing the recording module comprises utilizing the recording module to fully record input information to a memory device of the computer," as recited in Appellant's dependent claim 30.

Also, regarding Appellant's dependent claim 31, the combination of Abdelilah and Kaler at least fail to disclose, for example, "wherein utilizing the recording module of the modem comprises executing a recording application program on the computer." The Final Office Action states the following:

> see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in-first-out (FIFO) buffers 355, 360. **The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310** as will be described further later herein."[48]

However, as shown above, Abdelilah's disclosure of FIFO buffers 355, 360 implemented in DSP memory 345 **of modem 310** clearly fails to teach a recording application program **on the computer (i.e., the second device)**. Nowhere in Abdelilah

[48] Final Office Action, Page 19, Lines 15-18.

is there any disclosure of a recording application program on Abdelilah's remote device communicating with Abdelilah's host 300 over PSTN and via server modem (not shown) and modem 310. Kaler fails to remedy the deficiencies of Abdelilah. As such, the combination of Abdelilah and Kaler clearly fails to disclose, for example, at least "wherein utilizing the recording module of the modem comprises executing a recording application program on the computer," as recited in Appellant's dependent claim 31.

Further, regarding Appellant's dependent claim 32, the combination of Abdelilah and Kaler at least fails to disclose, for example, "the first device is a personal computer; and utilizing the recording module to **fully record the input information input to at least the first and/or second inputs of the modem** comprises utilizing the recording module to **fully record the input information** comprising: data input to the first input from the personal computer; commands input to a command input of the modem from the personal computer; and samples input to the second input from the second device through the communication network." The Final Office Action states the following:

> see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in-first-out (FIFO) buffers 355, 360. **The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310** as will be described further later herein." and 28-33, "...while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to **obtain data related to performance of the modem 310** during an active communication session supported by the primary path 315 to the modem 310."[49]

[49] Final Office Action, Page 20, Lines 4-10.

> see Column 7: 44-51, "The host system 300 is coupled to the modem 310 through a primary path 315 which supports communication services utilizing the modem 310."[50]
>
> see Column 9: 33-37, "Performance information so obtained may include a variety of information including...call setup codes (CSR CODE) such as those available on Microsoft Corporation's AT code #UD (UniModem diagnostic command specification) ...."[51]
>
> see Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port 320 and provided to a destination application executing on the host system 300 by modem 310."[52]

However, Abdelilah's mere disclosure of recording state transitions and obtaining data related to the performance of the modem 310 does not teach **fully recording the input information input to at least the first and/or second inputs of the modem**. Nowhere in Abdelilah is there any disclosure that all of the information arriving over primary path 315 and through port 320 is recorded. Further, Abdelilah's mere disclosure of being capable of obtaining call setup codes does not teach recording all of the commands input to a command input of the modem (i.e., fully recording). Kaler fails to remedy the deficiencies of Abdelilah. As such, the combination of Abdelilah and Kaler cannot teach "the first device is a personal computer; and utilizing the recording module to **fully record the input information input to at least the first and/or second inputs of the modem** comprises utilizing the recording module to **fully record the input information** comprising: data input to the first input from the personal computer; commands input to a command input of the modem from the personal

[50] Final Office Action, Page 20, Lines 11-13.
[51] Final Office Action, Page 20, Lines 15-17.
[52] Final Office Action, Page 20, Lines 19-21.

computer; and samples input to the second input from the second device through the communication network," as recited in Appellant's dependent claim 32.

Additionally, regarding Appellant's dependent claims 35 and 44, the combination of Abdelilah and Kaler at least fail to disclose, for example, "wherein the model of the modem comprises a software component that is the same as a software component of the modem being modeled." The Final Office Action acknowledges that Abdelilah fails to teach the Appellant's claim limitations; however, the final Office Action alleges that Kaler's disclosure at Figure 14 and Column 33, Lines 15-20 remedy the deficiencies of Abdelilah.[53] However, the cited section of Kaler merely discloses user interface features of Kaler's animated application model, which is not a software component that is the same as a software component of the modem being modeled. Put another way, the software component of the modem would not have the user interface features described in the cited section describing Kaler's animated application model. Nowhere in the combination of Abdelilah and Kaler is there any disclosure of a software component that is the same as a software component of the modem being modeled. As such, the combination of Abdelilah and Kaler cannot teach "wherein the model of the modem comprises a software component that is the same as a software component of the modem being modeled," as set forth in Appellant's dependent claims 35 and 44.

Also, regarding Appellant's dependent claim 36, the combination of Abdelilah and Kaler at least fails to disclose, for example, "wherein: **the model of the modem comprises a hardware component that is the same as a hardware component of**

[53] Final Office Action, Page 23, Lines 6-10 and Page 28, Lines 14-18.

the modem; and executing the model of the modem comprises **utilizing the hardware component**." The Final Office Action states the following:

> see Figure 14; Column 3: 58-65, "While the invention has utility in analyzing the performance of a software application that is executing on a distributed data processing system, its utility is not limited to such, and it has utility in analyzing the performance of computer hardware..."; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application."[54]
>
> see Column 35: 36-47, "...so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening."[55]

However, the Final Office Action seems to be confusing analyzing the performance of computer hardware with "wherein: **the model of the modem comprises a hardware component that is the same as a hardware component of the modem**; and executing the model of the modem comprises **utilizing the hardware component**." The Appellant notes that nowhere in the combination of Abdelilah and Kaler is there any disclosure that Kaler's Animated Application Model comprises a hardware component that is the same as a hardware component of the modem and that the execution of the Animated Application Model comprises utilizing the hardware component. Kaler fails to remedy the deficiencies of Abdelilah. As such, the combination of Abdelilah and Kaler

[54] Final Office Action, Page 20, Lines 15-17.
[55] Final Office Action, Page 20, Lines 19-21.

cannot teach "wherein: **the model of the modem comprises a hardware component that is the same as a hardware component of the modem**; and executing the model of the modem comprises **utilizing the hardware component**," as recited in Appellant's dependent claim 36.

Accordingly, the Appellant submits that claims 20-26, 28-38, 42-44 and 46 are allowable over the references cited in the Final Office Action at least for the above reasons. The Appellant also reserves the right to argue additional reasons beyond those set forth above to support the allowability of claims 20-26, 28-38, 42-44 and 46.

III. Claim 45 Is Not Obvious Over Abdelilah in view of Kaler and further in view of Read

Claim 45 stands rejected under 35 U.S.C. §103(a) as being obvious over Abdelilah in view of Kaler and further in view of Read. Claim 45 depends from independent claim 19, and Read fails to make up for the previously mentioned deficiencies of Abdelilah in view of Kaler. Thus, for at least the reasons stated previously with regard to claim 19, the Appellant submits that claim 45 is allowable over the combination of Abdelilah, Kaler and Read, as well. Additionally, the Appellant submits that claim 45 is independently allowable.

Accordingly, the Appellant submits that claim 45 is allowable over the reference cited in the Final Office Action at least for the above reasons. The Appellant also

reserves the right to argue additional reasons beyond those set forth above to support the allowability of claim 45.

CONCLUSION

For at least the foregoing reasons, the Appellant submits that claims 9-13 and 19-46 are in condition for allowance. Reversal of the Examiner's rejection and issuance of a patent on the application are therefore requested.

The Commissioner is hereby authorized to charge $540 (to cover the Brief on Appeal Fee) and any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

Respectfully submitted,

Date: 15-SEP-2010

By: /Philip Henry Sheridan/
Philip Henry Sheridan
Reg. No. 59,918
Attorney for Appellant

McANDREWS, HELD & MALLOY, LTD.
500 West Madison Street, 34th Floor
Chicago, Illinois 60661
(T) 312 775 8000
(F) 312 775 8100

(PHS)

CLAIMS APPENDIX
(37 C.F.R. § 41.37(c)(1)(viii))

1-8. (Canceled)

9. A modem device comprising:

a first input that operates to receive information from a first device that is utilizing the modem device to communicate with a second device through a communication network;

a second input that operates to receive information from the second device through the communication network; and

a recording module processor communicatively coupled to the first input and the second input that operates to fully record input information arriving at one or both of the first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis.

10. The modem device of claim 9, further comprising a command input that receives modem control commands from the first device, and wherein the recording module processor further causes modem control commands arriving at the command input during real-time operation of the modem device to be fully recorded for subsequent non-real-time analysis.

11. The modem device of claim 9, wherein the first device is a personal computer, and wherein the recording module processor operates to cause the input information arriving at the first input from the personal computer and arriving at the second input from the second device through the communication network, during real-time operation of the modem device, to be fully recorded on a memory device of the personal computer.

12. The modem device of claim 9, wherein the recording module processor operates to cause input information arriving at the first input from the first device and arriving at the second input from the second device through the communication network to be communicated to a networked computer communicatively coupled to the modem device over the communication network and fully recorded on a memory device of the networked computer.

13. The modem device of claim 9, wherein the modem device_comprises an ADSL modem.

19. A non-real-time playback environment for analyzing real-time performance of a modem, the environment comprising:

a memory comprising input information recorded by a recording module residing on a modem, wherein the recording module fully records the input information received at the modem during real-time operation of the modem; and

a playback module communicatively coupled to the memory, the playback module comprising a model of the modem that the playback module executes according to the input information in the memory.

20. The non-real-time playback environment of claim 19, wherein the input information comprises:

information from a computer coupled to the modem; and

information from a device with which the computer was communicating through a communication network using the modem.

21. The non-real-time playback environment of claim 19, wherein the input information comprises data and modem control commands sent from a computer to the modem.

22. The non-real-time playback environment of claim 19, further comprising a debugging module communicatively coupled to the playback module that provides for controlling and observing the operation of the playback module.

23. The non-real-time playback environment of claim 19, wherein the model of the modem comprises a bit-exact software model of the modem that, when executed, produces results that are the same as an original modem that the bit-exact software model is modeling.

24. The non-real-time playback environment of claim 19, further comprising a computer communicatively coupled to the modem, and wherein the memory is a memory device of the computer.

25. The non-real-time playback environment of claim 24, wherein the computer comprises the playback module.

26. The non-real-time playback environment of claim 19, further comprising a networked computer communicatively coupled to the modem over a computer network, and wherein the networked computer comprises the memory.

27. A method for analyzing real-time operation of a modem, the modem comprising a first input that receives information from a first device that is utilizing the modem to communicate with a second device through a communication network and a second input that receives information from the second device through the communication network, the method comprising:

operating the modem in real-time to communicatively couple the first device and the second device, the modem comprising a recording module;

while operating the modem in real-time, utilizing the recording module to fully record input information input to at least the first and/or second inputs of the modem; and

after operating the modem in real-time, executing a model of the modem, where the model is responsive to the recorded input information.

28. The method of claim 27, wherein:

the first device comprises a personal computer; and

utilizing the recording module comprises utilizing the recording module to fully record the input information input to at least the first and second inputs of the modem to a memory device of the personal computer.

29. The method of claim 28, wherein:

operating the modem comprises driving the modem as an operating system device driver on the personal computer.

30. The method of claim 27, wherein:

the second device is a computer; and

utilizing the recording module comprises utilizing the recording module to fully record the input information to a memory device of the computer.

31. The method of claim 30, wherein utilizing the recording module of the modem comprises executing a recording application program on the computer.

32. The method of claim 27, wherein:

the first device is a personal computer; and

utilizing the recording module to fully record the input information input to at least the first and/or second inputs of the modem comprises utilizing the recording module to fully record the input information comprising:

data input to the first input from the personal computer;

commands input to a command input of the modem from the personal computer; and

samples input to the second input from the second device through the communication network.

33. The method of claim 27, wherein executing the model of the modem comprises executing a software model of the modem, and the method further comprises reading the recorded input information into the software model.

34. The method of claim 27, wherein executing the model of the modem comprises executing a bit-exact software model of the modem.

35. The method of claim 27, wherein:

the model of the modem comprises a software component that is the same as a software component of the modem; and

executing the model of the modem comprises executing the software component.

36. The method of claim 27, wherein:

the model of the modem comprises a hardware component that is the same as a hardware component of the modem; and

executing the model of the modem comprises utilizing the hardware component.

37. The method of claim 27, further comprising debugging operation of the modem by, at least in part, observing execution of the model with the recorded input information in non-real-time.

38. The method of claim 27, wherein the modem comprises an ADSL modem.

39. The modem device of claim 11, wherein the modem device operates to cause the input information to be fully recorded on the memory device of the personal computer by, at least in part, being driven as an operating system (OS) device driver of the

personal computer to write the input information directly to a hard drive of the personal computer.

40. The modem device of claim 9, wherein the recording module processor is integrated into an integrated circuit of the modem device.

41. The modem device of claim 9, wherein the recording module processor operates to cause the input information arriving at the first input and the second input during real-time operation of the modem device to be fully recorded in exactly the same sequence as the input information is received at the modem device.

42. The non-real-time playback environment of claim 19, wherein the model of the modem comprises a bit-exact software model of the modem that exactly mimics the real-time operation of the modem.

43. The non-real-time playback environment of claim 19, wherein the playback module comprises playback software that, when executed by a processor, causes the reading of the input information into the model of the modem.

44. The non-real-time playback environment of claim 19, wherein the model of the modem comprises a software component that is the same as a software component of the modem being modeled.

45. The non-real-time playback environment of claim 19, wherein the model of the modem is a hardware model that comprises an actual hardware component that is the same as a hardware component of the modem being modeled.

46. The non-real-time playback environment of claim 19, wherein the playback module comprises playback software comprising a bit-exact model of the operation of the modem, such that any modem behaviors that occurred in real-time operation during the period of time over which the input information was obtained will recur during execution of the playback software in the non-real-time playback environment.

EVIDENCE APPENDIX
(37 C.F.R. § 41.37(c)(1)(ix))

(1) United States Patent No. 6,823,004 ("Abdelilah"), entered into record by the Examiner in the June 9, 2008 Office Action.

(2) United States Patent No. 6,467,052 ("Kaler"), entered into record by the Examiner in the August 29, 2006 Office Action.

(3) United States Patent No. 5,353,243 ("Read"), entered into record by the Examiner in the March 16, 2009 Office Action.

RELATED PROCEEDINGS APPENDIX
(37 C.F.R. § 41.37(c)(1)(x))

The Appellant is unaware of any related appeals or interferences.